

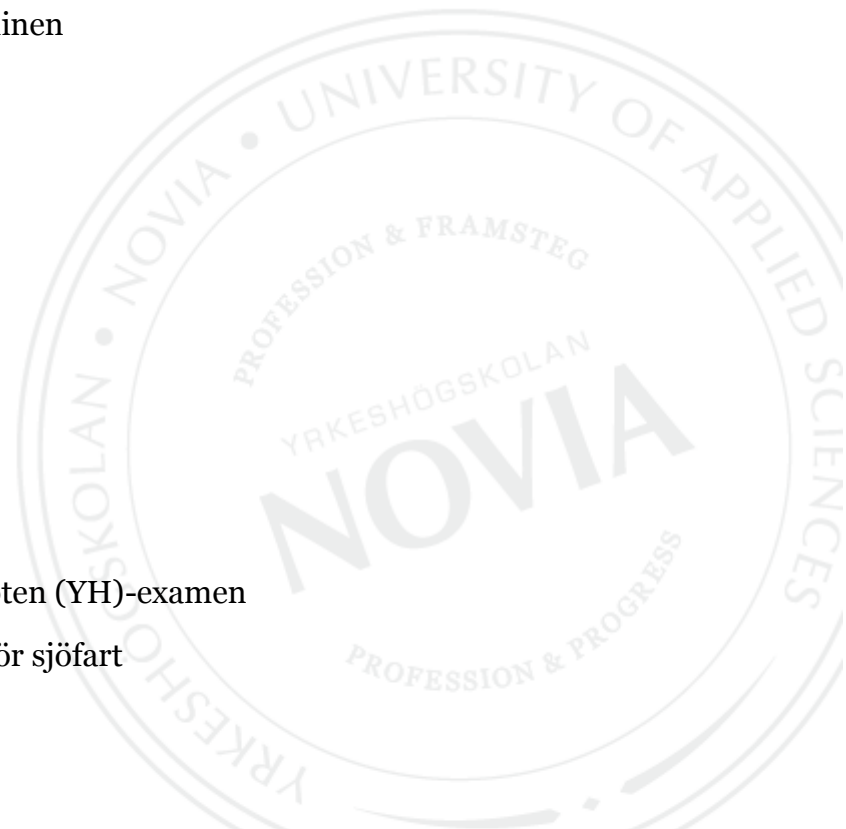
Helicopter landing procedures and landing manual in M/V Island Intervention

Jussi-Matti Aukusti Nurminen

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Author: Jussi-Matti Aukusti Nurminen

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Summary

This bachelor thesis defines the helicopter operations onboard the ship Island Intervention. All existing manuals are very hard to read, due to the amount of theoretical information concerning helicopter operations. This is the reason why I wanted to write a more practical synopsis of the operations. The thesis is written to be a summary of the operations and safety aspects in a more practical point of view.

The thesis starts with a theoretical part of the offshore business and helicopter operations, as it is an important part of the business. The theoretical part of the thesis handles in brief the construction of the helideck, the requirements and Island Intervention's helideck's safety equipment. The thesis is meant to be more practical than theoretical. Therefore, detailed theory and legal issues have been limited.

To obtain more content and practical ideas, I have used interviews as my research method. All interviewed personnel have been trained in helideck procedures during the helicopter operations and they all have several years of experience in offshore business and helideck operations.

To gain answers to my thesis problem, I used a questionnaire as information gaining method. The questionnaire was given to ten crewmembers, which all have HLO (Helicopter Landing Officer) training. The questionnaire consisted of five open questions. Thus, they were meant to be answered in the personnel's own words. An open questionnaire was chosen, for the reason that it would allow the participants to answer freely and express his/her own thoughts on their personal experiences. Therefore, the answers were not tied up to numeral multiple choice answers.

According to all examinee, helicopter operations are restively safe and in good standard. However, all of the participants agreed that the existing manuals onboard are too abstract and needed to be simplified. This observation supported my basic idea for this thesis.

Language: English

Key words: offshore, helicopter, landing manual

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Tiivistelmä

Tämä opinnäytetyö käsittelee helikopteri operaatiota laivalla jossa työskentelen. Nykyiset laivoilla olevat manuaalit ovat hyvin vaikealukuisia sisältäen paljon teoreettista informaatiota helikopterioperaatiosta. Tästä syystä halusin rakentaa käytännönläheisemmän paketin. Opinnäytetyö on rakennettu työkaluksi, josta on helppo ja nopea käydä läpi operaation pääkohdat ja turvallisuusaspektit.

Työn alkuun olen rakentanut teoriaosuuden, jossa annetaan lukijalle selvennys itse offshore toiminnasta ja siihen läheisesti liittyvästä helikopteri toiminnasta. Tässä osuudessa käsitellään lyhyesti myös helikopterikannen vaatimuksia ja Island Interventionin turvallisuusvälineitä. Koska työ on tarkoituksenmukaisesti ajateltu olevan painoltaan käytännönläheinen työkalu, rajasin pois turhaa teoreettista puolta ja juridista puolta.

Jotta työhön saatiin enemmän sisältöä ja käytännölliseen puoleen eri ammattilaisten ajatuksia, päätin käyttää yhtenä tiedonkeruumenetelmänä haastatteluja. Haastattelut suoritettiin Island Interventionin miehistölle, jotka ovat koulutettuja toimimaan helikopterikannella operaation aikana. Heillä kaikilla on jo vuosien kokemus öljypuolen laivatyöskentelystä ja helikopteri operaatiosta

Itse ongelman ratkaisussa päätin käyttää kyselyä tutkimusmetodinä. Kysely teetettiin 10 miehistönjäsenelle, eli kaikille saatavilla oleville HLO (Helicopter landing officer) kurssin käyneille. Kysely pitää sisällään 5 kysymystä joihin kaikkiin haluttiin sanallinen vastaus. Tämän tyylinen kysely antoi vastaajalle mahdollisuuden kertoa lyhyesti omista ajatuksistaan sitomatta liikaa vastauksia numeraalisiin monivalinta vastauksiin.

Vastauksista kävi selville, että turvallisuus helikopteri operaatioissa on hyvällä tasolla. Kävi myös selville, että vastaajat ovat yhtä mieltä kanssani mitä tulee manuaalien vaikeaselkoisuuteen. Monet kaipasivat selkeyttä manuaaleihin ja tämä tukee tätä opinnäytetyön tarpeellisuutta.

Kieli: Englanti

Avainsanat: offshore, helikopteri, laskeutumismanuaali

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Abbreviations and explanations used in this work

Client	Company, which has hired the vessel
Davinchi	Individual code for all personnel used in aviation
DP	Dynamic Positioning, ships position keeping system
DPO	Dynamic Positioning Operator, in charge of vessel position keeping
HLO	Helicopter Landing Officer
Helideck	Fixed deck specially planned for helicopter to land
LOA	Length Overall
Offshore	Oil business at sea
PA	Public Announcement
Rig/Platform	fixed or floating offshore unit
ROV	Remote Operated Vehicle, diving robot

1 Introduction

I currently work at a Norwegian offshore company called Island Offshore Management AS onboard the vessel Island Intervention. She is a Construction support vessel (details have been attached in Appendice 1). Due to the scope of our work we are forced to stay offshore for long periods at the time and sometimes we are not able to go to shore for crew changes. In these cases we have to use a helicopter. Helicopters have been used in crew changes for decades. However, due to changing weather conditions and floating platforms, the operation can be very risky. I do not have HLO training yet. However, it being an important aspect of my job, I have become very interested in helicopter operations.

1.1 Objective

There are a lot of different kinds of written manuals for helicopter operations. Among them common manuals, company manuals and ships operational manuals. Having been interested in these operations I wanted to read all of them. However, I immediately noticed the problem, that all crucial information is getting buried in a huge amount of technical information, which is not vital for everyday usage. Therefore, I wanted to make a new kind of manual for a more practical point of view, where the most crucial information is easily accessible. To get personnel opinions of this kind of manual I held questionnaire research for all HLO trained crew. With this questionnaire I tried to find out if this kind of manual is needed and wanted onboard. This thesis is not including the real landing manual as it might be understood wrong way in the title. These kind of safety related manuals are very time consuming to write and hard to get approval as official safety manual. The practical part of the thesis will give all crucial information of the procedure, as I thought it would be presented in real manual. However, this thesis can be used in real life due all the facts have been checked by senior officer onboard Island Intervention.

1.2 Research questions

Once I started to gather information I interviewed the personnel onboard on how they feel about this kind of manual and if it is needed. I obtained more positive than negative reactions. However, I still wanted to make sure that I am on the right track with this assignment. Thus, I made up questionnaire to find out how the personnel onboard think about this type of manual and the overall safety during helicopter operations onboard. This

turned out to be very resultful as I was able to obtain a lot of new relevant information. My very basic question of the whole thesis: "Is this kind of practical helicopter landing manual needed onboard and does it actually add safety and efficiency into this operation?"

1.3 Delimitation

I did not want this work to become full of technical data and legal issues as these types of manuals already exist. There is no doubt that technical and legal issues are important in landing manuals. However, the goal of this thesis was to include the most relevant information as compact as possible and make the main focus on the practical side of the helicopter landing procedures.

1.4 Structure of the work

In the beginning of this thesis there is a short theoretical and technical introduction to offshore business, helicopters and helidecks. This introduction and facts are handled in sections 2–4.

The second part of the thesis focuses on the practical side of the operations. This includes landing procedures and personnel roles and responsibilities during the whole helicopter landing operation. The information is gathered by interviewing my colleagues onboard the Island Intervention. This way I was able to gather more information of what is going through the minds of the personnel during the helideck operations and what should be taken into consideration before, during and after the operation. Four persons were interviewed who have years of experience in offshore and helicopter operations. This way I gained information that could not have been found in any existing manuals. Furthermore, I was able to get an interview with Offshore Flight Operations Manager Matt Rhodes of Bristow Helicopters Ltd. who kindly explained the helicopter operation from a pilot's point of view. This practical information is handled in sections 5–6.

I wanted to obtain more information on how people think about this kind of manual, I developed a questionnaire for the personnel onboard the Island Intervention. The questionnaire consisted five open word questions, which are gone through in sections 7–8.

2 Introduction to offshore business

I currently work as 1st.Officer/DPO (Dynamic Positioning Operator) onboard the M/V Island Intervention, which is owned by a Norwegian offshore company called Island Offshore Management AS. She is a Subsea Construction Vessel (details of the vessel can be found at the end of this work in appendix1). I have been working in offshore for some years and gained quite a lot of experience. This next section is based on these personal experience.

My job description onboard is to work as Deck Officer. When the ship calls into port I am in charge of my watch monitoring deck operations and also assisting chief officer in performing different kinds of equipment maintenance. When the ship is sailing to it's worksite, I am in charge of safe navigation of the vessel. When we are approaching the worksite, we set up the DP system. We test it, check given parameters and monitor positionkeeping. The DP system itself is handling the thrusters, however, the system needs constant monitoring as even the most insignificant input of wrong kind of information might lead to total position loss. This can be very dangerous, for the reason that the ship may be connected to subsea structures when there is limited area of drift off.

The ship is planned to work offshore, which means more or less distance away from the shore line, which is very common especially in the oil and gas industry. Our ship is built for ROV support, subsea-construction and survey operations. To be able to perform different projects onboard the ship, it may take days, even years and thus, the ships crewchange, provision, bunker and garbage etc. are more challenging than in a conventional cargoships as they call ports more frequently than offshore ships.

All these pre-mentioned material operations like provision, bunkering and garbage can be done by specially planned supplyboats. These vessels can load all kinds of pre-ordered goods and other supply for the ships (or rigs) at offshore. Backloads of for examble garbage and slop are brought to shore again. Surely, these processes would be much easier to perform if/when the ship calls the port. However, this will be done only when time and vessel`s shedules allow this. These decisions are made by the Captain and projectleaders onboard (Clients onboard and at offices ashore). Overall, the material transportation is a very time consuming operations as the supply ship has to be loaded, sailed offshore and back to shore. This process can take days which is just fine when we are talking about dead

cargo and it does not matter even if all this takes days. However, when we perform a crewchange, things tend to be more complicated.

Offshore ships and rigs have a lot of personnel. Some rigs have personnel of several hundreds and we normally have between 70-100 persons onboard. Supplyships are not planned to carry any extra personnel other than their own crew and even though the ship is working close to the shoreline it may still take several hours, even days, to change entire crew. Ship-to-ship personnel exchange may be very risky and impractical. Thus, helicopters have been a tremendous aid for offshore business since the 1960`s. (Bristowgroup, 2013)

3 Offshore and helicopter

The first hydrocarbon discovery in North Sea was in Dutch sector, Groningen in 1959. This discovery led into enthusiasm to find oil in all parts of the North Sea. The first license for offshore in Norway was signed in 1963. However, it was only for seismic research but not for drilling. The first license for drilling were signed 1965 and the first well was drilled in summer 1966. (Ministry of petroleum and energy, 2014). The first wells in UK sector were drilled at 1967 and already in early 1970`s there were a major discoveries in both Norwegian and UK sectors. (Education Scotland, 2014)

During these times the demand for helicopters began to increase in the offshore drilling business, as tools and personnel could be transported and delivered on and off the rigs around North Sea faster and more efficiently. For example, one of the first and largest helicopter operators in the North Sea has been the Bristow Group, which started their flights in North Sea over 50 years ago. Bristow Group is also the most commonly used operator when our company has to utilize helicopters. Nowadays, there are several operators and aircraft types around the world and even in North Sea area. These fast flying and rather flexible aircrafts can take up to 20 persons onboard and can land almost anywhere, even in very hard wind. Furthermore, some of the models are able to hover and even winch above the vessels without landing (coastguard and military). Therefore, helicopters are fast, practical and fuel efficient methods to change personnel in offshore business. (Bristowgroup, 2013)

3.1 Helicopter types

There are several helicopter operators around the world and also several types of helicopters that are all depending on the site they are working at. The most commonly used aircraft types in the North Sea area are the Sikorsky (S-76, S61, S-92), the Super Puma (AS332L) and the Eurocopter (EC155, EC225). One of the largest and most commonly used aircraft type is Sikorsky S-92. In next section I will take this model under closer observation, as it is one of the biggest commercial helicopter types, and therefore one of the most used. (Bondaviationgroup, 2013; Bristowgroup, 2013)

3.2 Sikorsky S-92

Sikorsky S-92 is one of the largest and therefore, one of the most used aircraft type in commercial purposes. It weights approx. 12 metric tons, LOA 20,88 meters and the main rotor diameter is 17,17 meters. It can carry up to 19 persons plus 2 crewmembers, its maximum external takeoff weight is 4,5 metric tons and its cargo capacity in cargo hold is 4 cubic meters. The S-92's maximum working range in fully loaded condition is 550 nautical miles and max speed is 150 knots. Therefore, the maximum working time is about 3,5 hours. In practice, this means that it can fly 1,5h one-way, land and fly back. This is a distance that takes a day for a typical supply vessel. (Sikorsky, 2013; The Wednesday report, 2013)



Figure 1. Sikorsky S-92 approaching (Picture by J. Nurminen)

4 Helideck construction and helideck equipment

Large, heavy and advanced helicopters need a lot of planning, from the drawing board stage until the helicopter is ready for landing. The larger the helicopter is the heavier and stronger the helideck has to be. The Helideck, it's equipment and safety equipment that are included have to be approved and certified by flag state authorities and furthermore, it has to fulfil the flag state requirements for specific trading areas. On our vessel, our helideck is approved by HCA (Helideck Certification Agency) (Appendix2), which is the leading authority in the world and covers all the ships working in the North Sea trading area. We are using their rules and guidelines on how to operate and maintain the helideck and it's equipment. (Helideck certification agency, 2013)

4.1 Helideck construction

The helideck has to be placed in a wide open area with 210° of free airspace for the helicopters to approach. The most commonly used cover material is aluminium and it has to have non-slip surface to add as much friction as possible. Some countries, for example Norway and the UK, require special nets to add even more friction. Furthermore, the helidecks have to have surrounding safety nets to avoid objects and personnel from falling. The helidecks are illustrated on the next page. (Helideck certification agency, 2013)

4.2 Helideck visual aids

The color of the helidecks can be either aluminium grey or painted green. The installation name has to be clearly painted and it needs to illustrate a big white "H" letter surrounded with a yellow circle that is indicating the optimum landing area. Furthermore, the D-value has to be indicated, which means the maximum size of helicopter that can land, and also the maximum weight the helideck can take on. (Helideck certification agency, 2013)

The helidecks have to be illuminated during poor visibility. This means it must have surrounding green perimeter lights added with white floodlights. Furthermore, wind indicators have to be mounted nearby the helideck and they must be alight during poor visibility and all the ships fixed constructions, for example cranes, towers and masts, have to be alight with red warning lights. (Helideck certification agency, 2013)



Figure 2. Helideck lighting (Picture by J. Nurminen)

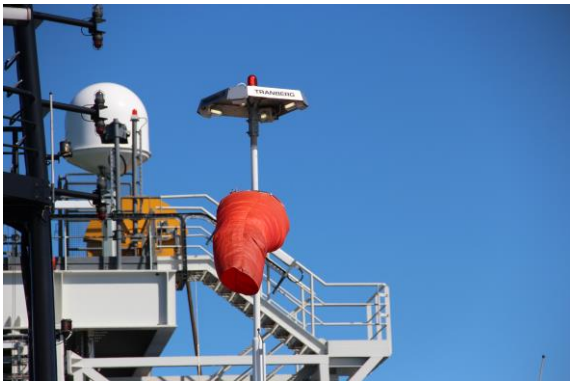


Figure 3. Windsock (Picture by J. Nurminen)

4.3 Helideck construction in Island Intervention

The Island Intervention's helideck is designed to be able to take down one of the biggest helicopter models, the Sikorsky S-92. The deck's D-value is 20,88m, the maximum weight is 14,6 metric tons and overall diameter 26.1 meters including safety nets. It meets all the highest requirements and thus, the vessel can operate all around the world. (Island Intervention helideck certificate, 2011)



Figure 4. Island Intervention helideck daytime (Picture by J. Nurminen)

4.4 Helideck safety equipment in Island Intervention

During all landings there is always high risk of accidents. The helidecks can be relatively small landing areas for such big and powerful objects. Thus, even a minor miscalculation can lead to a tremendous disaster. Therefore, there are a lot of different types of relevant and compulsory safety equipment prepared nearby the helideck. Most of them are firefighting and demolishing tools. The ship's crew must have completed special training to be a part of the helideck crew. The training requires the members to know where helideck equipments are stored and how are they used. The following is a list of the Island Intervention's all helicopter related firefighting and lifesaving equipment and where the tools are located. (Island Intervention QA-manual, 2013)

Table 1. Firefighting and safety equipment (Island Offshore QA-manual, forms and checklists)

FIRE STATION # 3, wheelhouse, top Helideck.			Helicopter crash equipment	
Equipment	Qty	Remarks	Equipment	Qty
UHF	2		Adjustable wrench	1
BA set	2		Claw hammer	1
Spare bottles	2		Fire axe, insulated	2
Life line	2		Rescue axe, large	1
Flash light	2		Bolt cutter 60cm	1
Fire axe	2		Crowbar, large	1
Helmet	2		Boathook	1
Trousers	2		Bow saw	1
Jacket	2		Spare blades bow saw	6
Gloves	2		Fire blanket	4
Boots	2		Ladder	1
Balaclava	2		Jack 2t	1
helideck extinguishers			Pliers, side cutting	1
Helideck, P/S	CO2	20 kg	Set of assorted screwdrivers	1
Helideck, center stairs	DP	50 kg	Harness knives	2
Helideck S/S	DP	50 kg	Chisel	1
Foam monitors Port / Stb	foam	100 litre	Flash lights	2
			Waistbelt with safety line	2
			Shovel	1
			Sheet metal shears	1
			Iron bar, large	1
			Jack strap	6
			Sandbags	8
			Extra powder	4
			Foam tank, 20L	1

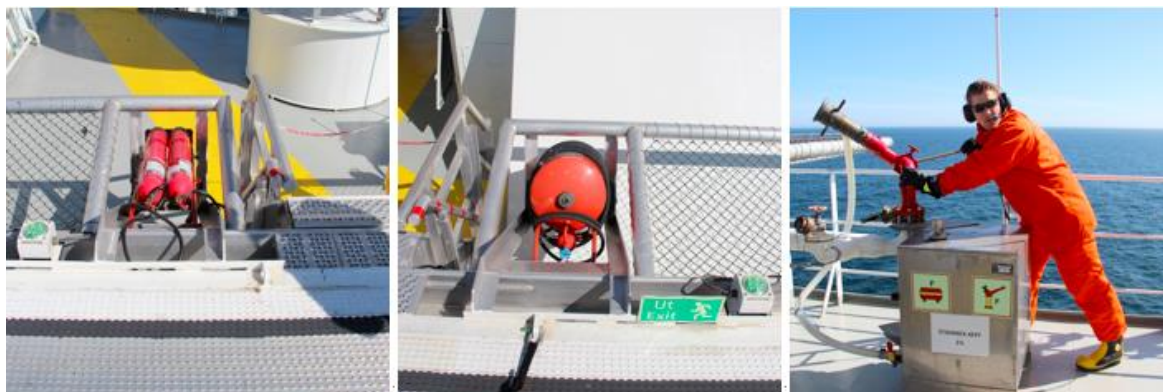


Figure 5. Firefighting equipment (Picture by J. Nurminen)

The pictures above illustrate what fire fighting equipment is nearby the helideck. There are 20 kg CO2 extinguisher on the port side of the stairs, 50 kg dry powder extinguishers at the centre and starboard side of the stairs and both sides have water/foam monitors with 100 liter foam tanks and water hose hydrants. Furthermore, there are smoke diving gear and demolition tools that are located inside the room situated on the port side, next to staircase to the wheelhouse. (Island Intervention safety manual, 2013)

5 Landing procedures and personal roles and responsibility

This section will cover the different personnel who participate in the helideck operations before, during and after helicopter landing. All the personnel involved are trained with several years of experience in helicopter operations. This part of the thesis will go through the entire team and the personnel's duties will be individually defined. Furthermore, it will define what key issues are to be kept in mind during landing and takeoff according to each individual person. (The list of personnel interviewed is attached in section source.)



Figure 6. Helideck personnel (Picture by J. Nurminen)

5.1 Captain

The Captain`s role begins some days before the helicopter`s landing. The crew change days are more or less fixed. However, if a client is requesting that the ship has to stay at the work site due to some crucial work related issues, the Captain is obligated to starts to plan the change with the helicopter. First of all, the Captain has to gather personnel information of who is going home and who is coming onboard and based on this information order the amount of helicopters needed. He will need the weight of all passenger and cargo. Ship`s Medic will gather this information and then forwards it to Captain. Secondly the Captain will then prepare the crew and cargo manifest. (personal communication with Sæther, 20.07.2013)

About an hour before landing the Captain appears up to the bridge and determines if the ships operations can proceed while landing. He will need to speak with the bridge team about the operations, such as wind direction and ship movements etc. and who is taking part in the helideck crew. These issues are crucial because if the ship`s operation proceeds while helicopter is landing there has to be enough personnel working on deck. An hour before the helicopter takes off from shore the ship has to send a report (Appendix3 & 4) of

ships helideck movements and present local weather. This information is created automatically from weather sensors, vessel movement sensors and automatically indicates if the helideck is “green” or “red” for landing. This report is normally sent by one of the Bridge Officers. However, since the Captain is responsible of all operations onboard he has to be sure it is done correctly. There are some checklists (Appendix5 & 6) to be filled out before landing and the Captain can assist with them. This is for the reason that often one or more of the bridge crew is participating with the helideck crew. (personal communication with Sæther, 20.07.2013)

Just before the landing of the helicopter the Captain and pilot make a communication check and the Captain reads the present weather and ship movement report. After this, HLO takes command of the operation. However, the Captain always stays in charge of all operations. For example, if the weather changes rapidly he has to inform the helicopter pilot and determine if the operation can be continued. (personal communication with Sæther, 20.07.2013)

5.2 Helicopter Landing Officer (HLO)

The Helicopter Landing Officer is in charge of the whole operation of the helideck. He is responsible for the helideck conditions, helideck crew, passengers and cargo. He has radio connection to the bridge (captain), pilot and to the entire helideck crew. (personal communication with Gaundal, 20.07.2013)

When the helideck crew is named they have a meeting about one hour before landing. The HLO has to familiarize himself to the aircraft type that they will be dealing with. The HLO must inform the rest of the helideck crew about the weather, the specifications of the helicopter, the helicopter landing direction, the safe approach direction (Appendix7) of the aircraft, the number of passengers and cargo and where cargo is located in the cargo hold. Furthermore, he must ensure the entire crew is wearing full PPE (Personal Protective Equipment) specified to their duties. He also goes through procedure and hand signals to be used during operation. Filling in checklists, (toolbox talk, safejob analysis, see attachment) signing them and stamping the logbook is also an important part of his duties. (personal communication with Gaundal, 20.07.2013)

Before landing, the HLO checks up the surroundings of the helideck. He checks that the helideck is fit for purpose, helideck lightning is on, helideck safety net (around the helideck) and friction net is in good condition and tight according to the regulations, windsock is up and (if needed) illuminated. Furthermore, all objects near are secured so that there are no possible loose objects that could harm the helicopter during landing. He also has the passenger and cargo manifest with him to be handed to the pilot. All this he then reports to the Bridge Officer where he then ticks off from the checklist. (personal communication with Gaundal, 20.07.2013)

When helicopter is making the last approach the pilot requests “helideck clear” and if everything is clear the HLO responds to pilot “Helideck is clear”. After this, the HLO has to keep the helideck clear of all material and personnel. When the aircraft is safely landed and the pilot has turned the blinking red strobe lights off the helideck crew can enter the helideck. (personal communication with Gaundal, 20.07.2013)

When the HLO gets the visual or the verbal signal from the Pilot he determines the safe approaching direction towards the helicopter. He then positions himself so that the pilot, helideck crew and whole operational area is under his supervision and gives the helideck crew permission and direction to approach the helicopter and secure its wheels with sandbags. The HLO has to be in an alert state of mind to make quick decisions while the helicopter is on deck. For example, if weather changes rapidly, the HLO has to react quickly to get personnel and cargo off the helideck prior to the helicopters possible emergency takeoff. Therefore, it is very important that the HLO is experienced, trained and well aware of the helicopter type. (personal communication with Gaundal, 20.07.2013)

During the operation the HLO is not taking part in any action going on around the helicopter. He supervises and controls the entire operation but never leaves the pilots out of his site. He will point out the safe direction to approach the aircraft for both old and new passengers. Once the personnel have been swapped, cargo discharged and new one loaded he gives the pilot “the thumbs up” signal that the operation is finished. When the pilot repeats this sign the HLO orders the heliguards to remove the sandbags and clear off the helideck. (personal communication with Gaundal, 20.07.2013)

Sometimes the co-pilot leaves the cockpit to check the conditions of the aircraft. This is mainly the pilot’s duty. However, the HLO and whole helideck personnel have to be

alerted to monitor weird sounds or odors and possible cracks in hull and report them to the pilot. (personal communication with Gaundal, 20.07.2013)

As well as in landing, the helideck has to be fully clear of all objects and personnel when the helicopter is taking off. Right after takeoff the entire helideck crew has to be on standby for 5min to ensure that the helicopter is safely underway and does not need any more assistance from the installation. After this, the crew has a small evaluation of the operation, dresses down and continues their daily tasks. (personal communication with Gaundal, 20.07.2013)

5.3 Heliguard

There is normally one or two heliguards in the helideck crew. They assist the HLO in operation according to his orders. They are responsible of handling cargo, passenger`s luggage and assisting passengers on and off the aircraft. It is very important that the heliguards familiarize themselves to the helicopter types and the ships lifesaving appliances in case of an emergency. Furthermore, they need to know how to operate the helicopter doors and cargo hold hatches to get the operation to go smoothly. About an hour before landing the entire crew has a meeting about the operation. During this meeting there is time to familiarize themselves with the approaching aircraft. (personal communication with Gaundal, 20.07.2013)

Immediately after landing, the heliguards follow the HLO to the helideck and first secure the rear wheels with sand bags. After this, they start to handle luggage and passengers. Once all the cargo is safely unloaded and re-loaded all the hatches are closed (cargo is fastened and passenger are safely seated and seatbelt on). After this they remove all sandbags and leave the helideck according to the HLO`s orders. The last stage after takeoff, they sea secures all used equipment and undresses and continue their daily work. (personal communication with Gaundal, 20.07.2013)



Figure 7. Heligurds (Picture by J. Nurminen)

5.4 Firefighter

In the helideck crew one of the members is designated as a firefighter. He has to familiarize himself with the ships firefighting appliances (figure 5). For example, he must know how to approach a specific helicopter type and what to do in case of a fire. Furthermore, he needs to know all emergency exits and how to operate them. Right before landing he starts fire pumps to obtain pressure to fire hydrants and test both foam canons which are located at each side of the helideck (figure 5). The firefighter can assist the rest of the crew on the helideck. However, his most important task is to be on stand-by in case of an emergency. (personal communication with Gaundal, 20.07.2013)

Immediately after the helicopter has taken off, he releases the pressure of the water and foam systems, sea secures all of them and dresses down. Then he can continue with his daily routines. (personal communication with Gaundal, 20.07.2013)

5.5 Bridge officer / DPO

As I have been working in offshore for some years I have gained lots of experience of the helicopter operations. This section is based on these personal experiences. When we take down a helicopter on the helideck, we stay in DP mode (Dynamic Positioning), excluding the emergency situations. Regardless if we are in operational mode or not, there has to be persons monitoring the DP panels at all times. This person is called the Dynamic Positioning Officer (DPO) and he is in charge of the ships position and keeping the heading inline. He adjusts the ships heading to get the wind in optimum direction for the ship and for the helicopter to land. Helicopter always land straight against the wind. Therefore, the ship`s heading must be set in such a direction that the helicopters main door can be easily accessed for embarkment and disembarkment. In rough wind, this might not be possible. However, even a slight degree in deviation from straight ahead might help us and the pilot to carry on with operations.

30 minutes before landing, the bridge officers must cancel all crane operations and all cranes must be parked. If there is a stand-by vessel or rigs nearby, they have to be informed. Furthermore, at this point the ships FRC (Fast Rescue Craft) has to be on standby. The Deck crew must prepare the boat and lower it to the ship`s side prior to launch if needed. They also have to be suited up in survival suites and stand by in their stations.

10 minutes before landing, the Bridge Officers must turn off the radars and DP system`s wind sensors. In rough wind this might affect keeping the position. Thus, it is very critical to be alerted in case of position drop-off.

5.6 Medic

When the helicopter change is decided and the helicopter ordered, the Medic starts to gather personnel information needed for embarking and disembarking (safety course certification, personal information, luggage weight and amount and Davinci-code which is personal code used in helicopter aviation). Furthermore, he assists with the luggage weighing (Appendix8), logging and tagging. Some hours before helicopter is about to land, the Medic shows a helicopter safety video. It includes all safety equipments and procedures about the aircraft used at that day. (personal communication with Gjednes, Solås, 20.07.2013)

The Medic can be part of helideck crew as heliguard. If not part of the helideck crew the medic`s duty is to guide the personnel from the helicopter reception to the helideck prior to the embarking of the helicopter. (personal communication with Gjednes, Solås, 20.07.2013)

5.7 Passenger embarking helicopter on land

I have been involved in helicopter operations as passenger for many times and information in the next two sections is based on the experience I have gained during these times. Passengers entering the heliport on shore must go through the exact same safety arrangements than in normal aviation traffic. They need to be at the heliport about an hour before departure for check-in and security checks. The max weight of one piece of luggage is 10/12 kg in a helicopter. This has to be taken under consideration when packing ones bags. Normally weight will not become an issue. However, sometimes 12 kg is the maximum weight per luggage per person. This will be informed for passengers well in advance. Furthermore, all baggage has to be soft bags as hard suitcases are not allowed. When landing on a ship, there is less requirements for the content of the luggage. However, if a helicopter is going to land on a platform there are strict rules when it comes to electronics for example. Some platforms insist that no cameras or cell phones are allowed to be carried onboard. At least the batteries have to be able to disconnect from the item to avoid sparks. Furthermore, all medication has to be reported to the destination installation.

It is important for all passengers to get a right size immersion suit (or just life vest in some warm countries) and extra earplugs to protect ones ears from hard noise inside the helicopter. Prior to takeoff there will be a safety video featured that covers all safety matters of the specific helicopter model. After this, the passengers are guided to the helicopter. Before sitting down it is important for passengers to put on their ear protection and (if available) insert personal emergency SAR (Search and Rescue) homing beacon onto their immersion suite. When fastening in the seatbelts, it is important for the passenger to make sure that the straps are not twisted and finally that the straps are tight and all loose ends are secured.

5.8 Passenger embarking helicopter offshore

About two days before the helicopters embarkation, there will be a list posted on the information board asking everyone's personal details, such as their weight, size of immersion suite and the weight and amount of luggage. All passengers have to weight themselves and their carryon luggage in the helicopter reception. The ships medic will arrange this meeting and assists in logging all items.

On the day of the crew change, all embarking personnel have to go and see the safety video that is shown at the cinema or at helicopter reception. This will be informed in advance. About half an hour before all embarking personnel need to check in at the helicopter reception, suited up and ready to embark. Everyone must make sure that they take extra earplugs with them from the reception. When the helicopter has landed there will be someone to guide entire group up to helideck and into helicopter.

5.9 Pilot

The most critical phase during the whole operation for the Pilot are landing and taking off. Pilot's are handling the biggest workload during these times as they have to monitor weather, helideck movements and at the same time maneuver aircraft to safe landing as smoothly as possible. (personal communication with Rhodes, 17.07.2013)

Before the helicopter is taking off from heliport the Pilot gets a report from the offshore destination. Report includes full weather report and information of helideck movements. About 5-10 minutes before landing the Pilot contacts Command Bridge to get the final updated information. It is also very vital for the pilot to get weather information during the whole operation, especially when wind is varying a lot. They also rely on different visual references. There has to be fixed windsock to show wind direction, but pilot also observes waves, wind lanes, possible flares from flarebooms, smoke from funnels and offshore units direction. (personal communication with Rhodes, 17.07.2013)

If the helideck heading can be altered, it is usually headed up to wind or some 10-20 degrees from the wind direction. For the ships it is optimum direction to reduce vessel movements and this way we can show for the Pilot which way we want them to land to get for example cabin doors pointing as we want. On more fixed installations where heading cannot be changed helicopter has to land as conditions are. Helicopters mostly land against the wind. This is to get the best maneuverability due optimum performance from the rotor

discs. This is also good direction to reduce hot turbine gasses around helicopter and to reduce turbulence sectors caused by turbine itself or helideck superstructure etc. signal masts. (personal communication with Rhodes, 17.07.2013)

Last couple of miles the Pilot monitors these pre-mentioned variable conditions, but he also needs some help from helideck crew and radio control room. Helideck crew is making sure that helideck is safe to land and reports this to the Pilot before last approach. Radio room (or Command Bridge) gives last update of helideck movements, weather, nearby ships, requested landing direction and position on helideck for safe disembarkation for passengers and/or refueling. (personal communication with Rhodes, 17.07.2013)

When the Pilot has safely landed the aircraft, he signals the HLO by turning off the “anti-collision strobe light” or giving “thumbs up” that it is safe to approach the aircraft. It is very important not to enter the helideck without visual confirmation as the helicopter still might be unstable and down force can be very high. When the helideck crew positions themselves around the aircraft and the HLO is ready to start disembarking and embarking he signals this to his crew and pilot. The Pilot switches off seatbelt light and advices passengers over PA system how and in witch order disembarking is happening. For example if one of the passenger has to leave aircraft first (for handover), this has to be made clear for the Pilot. (personal communication with Rhodes, 17.07.2013)

Helicopter’s rotor blades are rotating during the whole operation as it is the most efficient for aircraft. There will be some down force and turbulences, high level of volume, moving helideck and moving aircraft tail and tail rotor are serious risk for hazards. Therefore it is very important that the HLO has good visual overall picture of whole operation, the helideck crew is highly trained to notice these risks and passengers are following given orders and disembarks to given direction off the vicinity of the aircraft. If weather conditions, helideck movements or something else unwanted occurs it has to be reported to the Pilot as he might has to take off to prevent accidents. Also the HLO has to be ready to stop operation that looks unsafe or if conditions are developing to unwanted direction. It is everyone`s duty to monitor the condition of the aircraft and report it to the Pilot but when landed the Co-Pilot has opportunity to walk around and check condition himself. (personal communication with Rhodes, 17.07.2013)

The most challenging part of the offshore helicopter operation is approaching in poor visibility due to the weather or darkness. When the Pilot approaches helideck in poor visibility he relies on weather radar to see the offshore unit and helideck, but the helideck has to become visual before they reach $\frac{3}{4}$ of a mile to start performing the final approach and landing. If the visibility prevents the landing, the Pilot has to make go-around. Information of the visibility improvement etc. can be given from the helideck to the pilot, but only if requested. Go-around is highly critical maneuver so the Pilot should have as little distraction as possible during this time. (personal communication with Rhodes, 17.07.2013)

If the helicopter is working as shuttle with multiple destinations it is important to handle baggage bay efficiently. Same destination baggage should be in the same place and the ones going to shore should be stored back of the hold. By little planning the helideck turnaround time can be reduced to minimum. (personal communication with Rhodes, 17.07.2013)

When the operation on the helideck is finished and the aircraft is ready to take off, the HLO is the last to leave the helideck giving pilot “thumbs up” or verbal confirmation that the helideck is clear for departure. After departure it is important that the helideck crew remains their readiness for about five minutes if helicopter has to return to the helideck due to emergency or technical issue. (personal communication with Rhodes, 17.07.2013)

6 Training

Helicopter operations require some special training. Both passenger and helideck crew have to go through their special emergency training. This next short section is explaining both of these courses. I have the HUET (Helicopter Underwater Escape Training) training so the information in the passenger section is based on the experience I got from the course. However, the information of the HLO training is based on the interviews.

6.1 HLO

To be a HLO you have to take a 4-day course. This includes theoretical part of the different helicopter types, different kinds of scenarios and fuel handing. Practical part of the course includes first aid, different kinds of scenarios in real life and fire fighting. This course has to be refreshed once every two years. Once you get this course you can work as part of the

helideck crew and you need 20 landings before you can actually work as a HLO. This is more a guideline than rule because different countries and different sources are giving a bit different information. (personal communication with Gaundal, 15.01.2014)

6.2 Passenger

There is a course also for passenger. Before you enter the helicopter you must have the HUET training. This course is only one day and has to be refreshed once every four years. This course also has a theoretical part, which includes theory of emergency landings, safety procedures and safety equipment. You also go through the practical part, which includes acting with liferaft and procedures during the actual simulator training.

The practical part happens all in the swimming pool teaching how to use the emergency suite and how to exit the helicopter in different kind of scenarios. A one scenario can be that everybody are strapped into chairs, helicopter is going into water, turns around and sinks. Then you will have to release yourself from your chair and find your way out from opened window.

7 Presentation of the questionnaire

The problem of the thesis was if this new kind of practical helicopter landing manual is needed. The research was built up to get information and safety aspects from crewmembers onboard Island Intervention. First I explained my goal to all personnel involved and then gave them time to answer the questionnaire.

In the research I used qualitative research method, as I wanted to get as much personal ideas as possible. Due to scope of the thesis to be more practical rather than theoretical I decided to go for this. The questionnaire was also meant to be as method to gather information. The manual was meant to be only for Island Intervention usage so I choose research sampling to all the crewmembers, which have the HLO training and have been involved in helideck operations. Questionnaire was held in autumn 2013. I sent it to 10 persons and got answers from all of them. Persons are from bridge and deck department (Captains, Chief Officers, ABs) so I got answers from very different points of views.

The actual questionnaire form is presented in appendix (Appendix9). In next five sections I will first present the each question and what I wanted to get with it. Following I will open up the answers in my own words. All the following writings are purely the answers given to me by the examinee and there are not any of my own ideas included. I also wrote a conclusion of the whole research in section 8.

7.1 Risks during helicopter operations

The first question was: *“What do you think are the biggest risks during helicopter landing?”*.

It is clear that the biggest risks are landing and taking off and this was pointed out in every answer. Helicopter has a huge down force that can do harm for helicopter itself (turbulences), the helideck construction and personnel nearby helicopter deck (passenger and helideck crew). Weather always adds different kinds of risk factors. Rough and varying wind conditions, visibility and vessel movements are things that helicopter pilot has to take into consideration each time as every landing is different.

7.2 Minimizing the risks

Second question was: *”What do you think should be done to minimize these risks?”*.

To reduce the vessel movements to minimum it is important to choose the ship’s heading as optimum as possible to keep the helideck movement as low as possible. When possible the ships heading should be altered towards the wind or swell. Sometimes heading is a bit of a compromise of these two.

The biggest risk during the operation for the personnel is the rotating rotors and turbulences. It is crucial that no-one enters the helideck before pilot has given the signal and after this all the movement has to be according the HLO`s orders and under his/her supervision. Passengers are directed to and from the aircraft and heliguards have to pay extra attention when moving nearby rotating tail rotor when handling the cargo in cargo room.

7.3 HLO training and training centres

Third question was: *“Do you think the training (training centres, onboard training) is up to date to fulfil the modern helicopter aviation requirements?”*.

All of the personnel involved in questionnaire were Norwegians and have been taking their courses in Norway so it is easy to understand their satisfaction as the rules and regulations in whole offshore business are in the strictest in the world. One answer brought up a good point where the ships personnel have to train the smoke diving regularly to keep up their license, the HLO training should pay more attention, not to actual smoke diving, but to the different kinds of unpredictable situations for example different kinds of emergency landings.

7.4 Onboard manuals

The fourth question was: *“Do you think the manuals available are up to date to fulfill the modern helicopter aviation requirements?”*.

About the half of the people thinks that the present manuals are up to date and sufficient, but majority has figured out the same existing problem when starting this assignment. Most of the manuals are full of technical data and it is very time consuming to find the information needed for the real situation. All the technical data should be written into one manual and all the needed practical information should be placed into one.

7.5 Practical landing manual

This fifth question: *“Do you think this kind of practical landing manual is useful onboard?”*.

It was meant to get peoples feelings for this kind of manual. First I explained what my thesis is all about and what I am trying to achieve with this questionnaire. All of the people agreed that this kind of manual is needed. First I thought that this is just because my colleagues wanted to give me the right answers I wanted, but there were some answers that actually went forward with it. It was mentioned that they have been thinking about exactly the same thing and they have been waiting for small “pocket size” manual for different kinds of aircraft types and for helideck procedures. We have all kinds of personal pocket manuals onboard so why not having one for helideck operations as well.

8 Conclusions

I started this project because I was interested in helicopter operation onboard. I read all the existing manuals and noticed that all of them were full of technical data, laws and regulations. It was very time consuming to go through all this trying to get vital information out of them as I tried to find the procedures during operation. I got the idea to start building up more practical landing manual that includes only the important information from helicopters and operation itself. I discussed with some colleagues about this subject and they gave me positive feedback.

I started to think the best way to get information for this. Technical data was pretty easy to find as we have all the manuals ready and computer is full of information and checklists. But the purpose was not to write a new manual again but to get the practical side of the operation. Therefore I decided to go for interviews to gather information and ideas from experienced personnel. They all have years of experience from offshore and helicopter operations and so the knowledge they have is more than any existing manual could ever offer to me. I also sent some E-mails to offshore helicopter operators trying to get some information from pilots and luckily got hold with Bristow helicopter pilot. He wrote me short presentation of helicopter landings in offshore units from pilot's point of view.

To get better point of different views I built up five questions research about safety landings and training. I also wanted to find out if this kind of manual is even needed or are people happy to work with the already existing manuals. I got a very good answers and very positive reaction for my work. All the people said that this kind of practical landing manual is actually needed and very important to have onboard. Therefore I continued to process this work. The early stage scepticism turned into a positive optimism as I talked with people and read their answers.

Overall, this process has been very educational. I have got a lot of new information that I would not have ever found from manuals or internet.. Therefor I think that when it is my time to go and handle the operation I will have a good knowledge of how things should be done.

Despite the positive attitude I got for this kind of manual I am not sure if I start building up serious manual. It would be just too difficult and time consuming to get it certified. However, hopefully someone gets this idea and soon we will have brand new manual adding safety to helicopter operation in offshore helidecks.

Bibliography

Bristowgroup

<http://www.bristowgroup.com/> (retrieved: 10.08.2013).

Ministry of petroleum and energy

<http://www.regjeringen.no/en/dep/oed/Subject/oil-and-gas/norways-oil-history-in-5-minutes.html?id=440538> (retrieved: 14.04.2014).

Education Scotland

<http://www.educationscotland.gov.uk/scotlandshistory/20thand21stcenturies/northseaoil/index.asp> (retrieved: 14.04.2014).

Bondaviationgroup

www.bondaviationgroup.com (retrieved: 10.08.2013).

Sikorsky

www.sikorsky.com (retrieved: 10.08.2013).

The Wednesday report

www.thewednesdayreport.com/twr/s92.pdf (retrieved 10.10.2013).

Helideck certification agency

<http://www.helidecks.org/> (retrieved: 10.08.2013).

Island Intervention helideck certificate
Appendix2 (2011).

Island Offshore Management: QA manual
Forms and checklists (latest revisions).

Island Intervention interviews:

Captain: Svein-Ole Sæther (20.07.2013).

Chief Officer / HLO: Ketil Gaundal (20.07.2013, 15.01.2014).

Medic: Håvard Gjednes, Anne Kristin Solås (20.07.2013).

Helicopter pilot interview:

Bristow Helicopters Ltd. Offshore Flight Operations Manager: Captain Matt Rhodes (17.07.2013).

Appendices

Appendix1: General information Island Intervention

IDENTIFICATION AND BACKGROUND:

Ship name	Island Intervention
IMO number	9460095
Signal letter	LAHP7
Flag	Norway (NIS)
Name of shipyard	Ulstein Verft AS
Year of built	2010
Classification society	Det norske veritas
Class notations	+1A1, SF, E0, DYNOPOS AUTRO,NAUTO-OSV(A), CLEAN DESIGN, OPP-F, CRANE, COMF-V(3), COMF-C(3), LFL, DK(+), HL(+), HELIDK, SHIP SHAPED WELL INTERVENTION(R)


REFERENCE DIMENSUONS:

Length overall (LOA)	120,20m
Reference length (LBB)	112,30m
Breadth moulded	25,00m
Moulded depth (1 st . deck)	10,00m
Max draught	8,00m
Shell thickness	0,010m
Keel thickness	0,014m

TONNAGE:

Gross tonnage	11572
Net tonnage	8588

Appendix2: Helideck information (Ship`s certificate)

	<p><u>Helideck Information Plate</u></p>
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HELIDECK Elev. 88ft	Var. Check	Position Check	Island Intervention		
HEIGHT OF INSTALLATION:		124 Ft	VHF	NDB	Issue date
HIGHEST OBSTACLE WITHIN 5NM:		Check	Check	410 – LAHP7	04 July 2011
FUELLING INSTALLATION:		Nil	Operating Company Island Offshore		Issued by Helideck Certification Agency
STARTING EQUIPMENT:		Nil			
HELIDECK D value		20,88 (26,1)			
P/R/H Category:		Norway 3 (B+)			
Max Weight		UK 3 (D) 14,6t			



Wind (T°)	Kts	Limitation / Comment	Non-Compliance
		<ul style="list-style-type: none"> Diving Support Vessel (DSV) Nil Approved for EH 101 	Nil

Appendix3: Helideck report (Island Intervention helideck report)

HELIDECK REPORT		Tel: +4723675840
		Fax: na
		Mob: +4796613245
From: Island Intervention - Ulstein IAS	Position: N 65° 47' 54", E 7° 43' 8"	Email: bridge@intervention.islandoffshore.com
Flight Number: HKS323	Date: 20.09.2011	Time UTC: 04:49:52
Dynamic positioning:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Accurate monitoring equipment: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

WEATHER OBSERVATION

Wind: 22.4027868970483 m/s	Weather: Cloudy	
Visibility: 2000 m	Clouds (few / sct / bcn / ovc in feet): Mostly Clouds	300 ft feet
Temperature: 12.3000001907349 °C	QNH: 994 mBar	Heading of helideck / vessel: 104.7° / 104.7°
Other relevant weather info (fog banks, rapid changes, etc):		
Sea spray observed over helideck:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

HELIDECK MOVEMENT 20 MIN. INTERVAL

MAX PITCH AND ROLL IN DEG. WITH REF. TO HORIZON			Max heave (top to bottom): 2.12 m
Pitch up 1.17°	Roll port -0.65°	Max Helideck Inclination: 2.14462117867002°	Heave period (if available): 866666667 s
Pitch down -0.97°	Roll starboard 1.91°		Max heave rate (if available): 14286 m/s

LOG INFO

Fuel available: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Return load: 8 Passenger(s)
Helifuel amount: 0 Litre	Total weight: 0 kg
NDB: MANDATORY 129.65 kHz	Luggage (incl. in total): 145 kg
VHF: - 0 MHz	Cargo, (incl. in total): 0 kg

Routing: 1:	2:	3:	4:
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Is Safety Video on the Helicopter available and shown to passengers prior to this flight?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
---	---

Remarks:

_____ Signature

Appendix4: Helideck report (Island Intervention helideck report)



Appendix5: Helicopter landing and take off checklist (Island Offshore QA-manual)



FORMS & CHECKLISTS MANUAL Helicopter Landing and Take off Checklist Bridge

Original Date: 21.04.2004
Revision no.: 6
Revision date: 18.10.2010
Prepared by: QA/HSE
Approved by: HRA

DATE:	CALLSIGN:	ETD:	ETA:
-------	-----------	------	------

	1,5 HOUR BEFORE HELICOPTER DEPARTS FROM HELIPORT	CHECKED		REMARKS DESCRIPTION
		YES	NO	
1	Update Helicopter type in HMS, Collect weather data and other relevant information for the helicopter flight			
2	Send weather data report to Operator/ heliport			
3	Call and check that report is received by heliport			
4	Switch on both helicom radars, enter correct frequency.			

30 MINUTES BEFORE LANDING				
5	Check Fire pump readiness			
6	All crane operations to be stopped and cranes stowed as required. Inform deck crew			
7	Collect Helicopter freight Manifest			
8	Vessel/Installation on DP-Control. Change to optimal heading			
9	Inform Stand By vessel			
10	Inform relevant parties			
11	Check if FRC is ready and standby			
12	Trim ship even heel with anti heel system			
13	Switch on the helideck lights: Perimeter-, windsock- and floodlights as required			
14	Switch on Helicopter NDB if requested			
15	Communication test with HLO			
16	Collect weather and motion data for the pilots			

10 MINUTES BEFORE LANDING				
17	Switch off radars			
18	Disable wind sensors on DP system			
19	Switch on helideck camera (monitor)			
20	Monitor Station keeping and heading			
21	Activate Helicopter Beacon (NDB)			

5 MINUTES AFTER TAKE OFF				
22	Switch on radars			
23	Enable wind sensors on DP system			
24	Switch off Helicopter Beacon (NDB)			
25	Switch off helideck lights			
26	Inform deck crew that normal operation can continue			
27	Send Departure report to operator			

Flight Information/Remarks:

Checklist completed

Time: Signature Duty Officer:

Appendix6: Helicopter communication log (Island Offshore QA-manual)



HELICOPTER OPERATION FAC 09 Helicopter Communication Log

Original Date: 14.08.2009
Revision no.: 2
Revision date: 12.04.2013
Prepared by: CHSE
Approved by: MSA

DATE:	ETA:	FLIGHT NUMBER:
LOG FREQUENCY:		TRAFFIC FREQUENCY:

~~NB! Weather and Vessel information to be updated 30 minutes before helicopter ETA.~~

WEATHER INFO		INSTALLATION / VESSEL INFO	
WIND FORCE	Kts	MAX PITCH UP	°
WIND DIRECTION	° T	MAX PITCH DOWN	°
VISIBILITY	Miles	MAX ROLL RIGHT	°
WEATHER (clear, rain, etc)		MAX ROLL LEFT	°
CLOUD COVER	Oct	MAX INCLINATION	°
CLOUD CEILING (Height)	ft	MAX HEAVE	Mtr
AIR TEMPERATURE	° C	MAX HEAVE RATE	cm/s
DEW POINT	° C		
QNH (Atmospheric pressure)	cm	VESSEL HEADING	°

HELICOPTER ARRIVAL DETAILS		MANIFESTED LOADS FROM VESSEL	
TRACK / RADIAL		NO OF PAX	No
DISTANCE	NM	WEIGHT OF PAX	Kg / Lb
ALTITUDE	FT	NUMBER OF BAGS	No
SOULS ONBOARD	No	WEIGHT OF BAGS	Kg / Lb
ENDURANCE	h/m	NO OF FREIGHT	No
		WEIGHT OF FREIGHT	Kg / Lb
ON DECK TIME	Time	TOTAL WEIGHT	Kg/Lb
OFF DECK TIME	Time	DANGEROUS GOODS	Y/N

DEPARTURE FLIGHT DETAILS			
DESTINATION		FUEL QUANTITY	Kg / Lb
TRACK / RADIAL		ENDURANCE	h/m
ALTITUDE	FT	SOULS ONBOARD	No
TIME EN-ROUTE	h/m	DEFECTS	Y/N

FLIGHT WATCH DETAILS			
FLIGHT WATCH FROM	Time	FLIGHT WATCH END	Time
DIST TO DESTINATION	NM	ETA DESTINATION	h/m

- Weather / Visibility / Cloud cover in ~~octas~~ / Cloud ceiling – few, scattered, broken, overcast
- Track / Radial is often mentioned as predefined tracks / routes, but can be true course in deg.
- If the pilot requests you to "take flight watch" repeat "I have the flight watch". ~~During~~ flight watch you can not under any circumstance leave the radio station!
- **NB! Helicopter type Sikorsky S-92 requires all weights reported in Lb**

Remarks / Requirements (weather info, reporting requirements, food requirements, etc):

Signature:

Time:

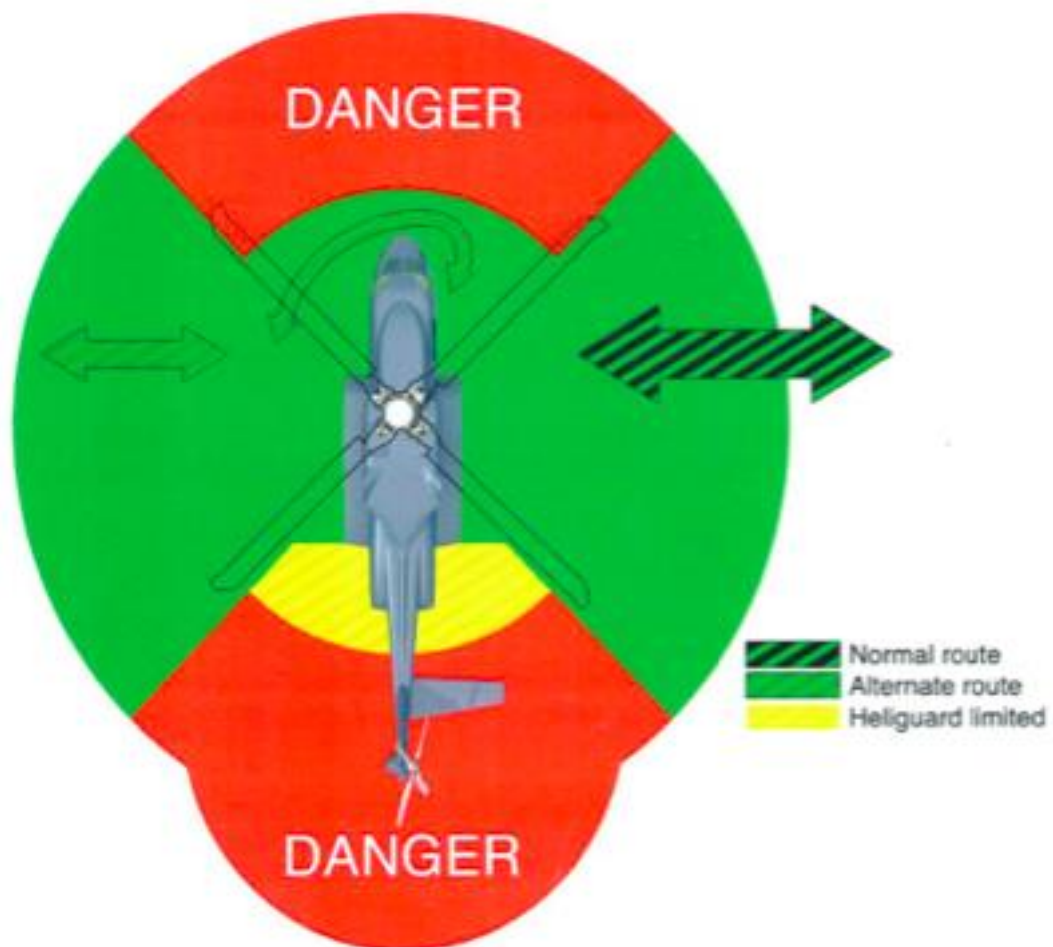
Duty Officer:

Appendix7: Sikorsky S-92 approach (OLF helideck manual)

enclosure B to OLF Helideckmanual rev. 01.09.2011

Helicopter danger zones

Sikorsky S-92



Alternate route to be used only under HLO supervision!

See Enclosure G "alternative access" for procedures.

Appendix8: Luggage (Island Offshore QA-manual)



FORMS & CHECKLISTS MANUAL PROCEDURE FOR WEIGHING OF PAX AND BAGGAGE/CARGO

Original Date: 26.05.2004
Revision no.: 2
Revision date: 18.08.2006
Prepared by: QA/HSE
Approved by: HU

PROCEDURE FOR WEIGHING OF PASSENGER AND BAGGAGE/CARGO

Passenger luggage must not exceed 10kg per piece

Cargo that is sent by helicopter should not be heavier than 15 kg per parcel. Heavier packages must be divided if possible. Exemptions may be made for priority cargo. ~~This to be notified in the manifest.~~ The cargo must then be specially labelled " Heavy cargo", with weight listed on each package.

Whenever passengers, luggage and/or cargo are transported by helicopter a manifest must be completed and accompany the helicopter. The manifest must contain weight on each passenger, and on each luggage and/or cargo

The manifest shall contain the following information:

- The full name of the ~~pax~~
- Employer
- The weight of the ~~pax~~.
- The weight of the luggage (per ~~pax~~)
- Weight of cargo/luggage(~~per~~ piece)
- Destination

When sending cargo or luggage from the ship, the HLO is responsible for checking the manifest and ~~ensuring~~ that it accompanies the transmittal. He is also responsible for checking that the number on board complies with the manifest.

When everything is checked OK, the manifest is to be handed to the helicopter crew.

As a rule, when transporting ~~pax~~, cargo is not to be placed in helicopter cabin. There are some exemptions listed in CHC Helicopter Manual.

Appendix9: Questionnaire

Research questions for Bachelor Thesis: Helicopter landing procedures and landing manual.

All these questioning forms are processed anonymous. They are all open questions which you can answer shortly in your own words.

1. What do you think are the biggest risks during helicopter operations?
2. What do you think should be done to minimize these risks?
3. Do you think the training (training centers, onboard training) is up to date to fulfil the modern helicopter aviation requirements?
4. Do you think the manuals available are up to date to fulfil the modern helicopter aviation requirements?
5. Do you think this kind of practical landing manual is useful onboard?